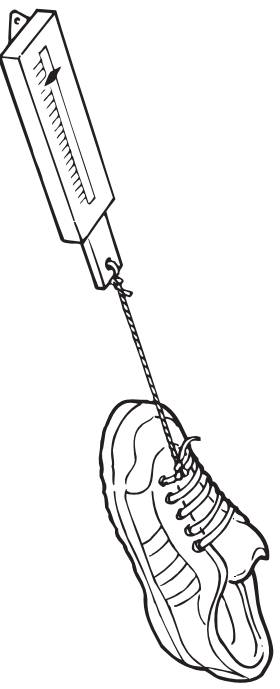


You going to investigate the relationship between the mass of a shoe and the force needed to pull it against friction.

Equipment

- a set of masses
- a shoe
- a forcemeter
- string
- a suitable surface to pull the shoe over



Planning

- 1 Decide how you are going to make the experiment fair.
- 2 Decide how many times you will do the experiment.
- 3 Decide how you are going to record the results.

Obtaining evidence

- 4 Choose a suitable shoe and a surface for the experiment.
- 5 Tie the forcemeter to the shoe.
- 6 Pull the shoe without any masses inside it, so that it moves at a steady speed across the surface.
- 7 Record the force shown on the forcemeter.
- 8 Repeat steps 4 to 7 six times, putting a 100 g mass in the shoe each time until the mass inside the shoe is 600 g (six masses). Pull the shoe at the same steady speed in each experiment.

Considering the evidence

- 9 Draw a line graph of your results. Put mass along the x-axis and force up the y-axis.
- 1 What happens to the size of force needed to pull the shoe as the mass increases?
- 2 Why do you think this happens? Use the word friction in your answer.

Evaluating

- 3 How could you improve this experiment?